[Second Edition.]

# PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

## Improvements in and relating to the Production of Porous or Permeable Coatings for Use in Galvanic Cells.

I, GEORG LÜDECKE, a Merchant, of German nationality, of 28, Hindenburgstrasse, Munich, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

A common method of preventing crumbling and dispersion of electrode material in the electrolyte of galvanic cells consists in applying a wrapper of gauze or yarn to the electrode, but this substantially increases the cost, and to avoid this it has been proposed to substitute an electrode coating produced by squirting, dipping or painting with a liquid which readily sets or solidifies, examples being solutions of cellulose esters, liquid wax or paraffin, ceresine, albumens, and colloids such as certain siliceous salts.

It has also been proposed to use coating compositions containing cellulose fibres in suspension, and in connection with dry cells it has been proposed to encase the positive electrode with a powder having as its base gum or a derivative of cellulose, dried and ground, to serve for gelatinizing the electrolyte.

According to my invention a coating composition for the electrodes and depolarizer is prepared by mixing cellulose fibres with a solution of acetyl cellulose or by treating partially acetylized cellulose with a solvent for acetyl cellulose. I may add alcohol, as it assists in imparting porosity to the coating, though alcohol by itself is not a solvent of acetyl cellulose.

Partial acetylization of cellulose may be effected by treating pure cellulose with glacial acetic acid, acetic anhydride and about 1% of sulphuric acid, the temperature being kept down to 23° C. by cooling, and the acetylization being stopped by adding water as soon as the formation of a clear, transparent body at the rim of the vessel is observed.

In the following I describe two examples of the method of preparing the coating.

EXAMPLE 1.

Acetyl cellulose is dissolved in a mixture of chloroform and alcohol, and finely divided pure cellulose is well stirred therein. The electrode or depolarizer is dipped in the liquid, and thus receives a coating through which the electrolyte can pass after solidification of the ester, by reason of the permeable cellulose embedded in the ester.

EXAMPLE 2.

Cellulose is partially acetylized, and the product, containing a proportion of unconverted cellulose, is treated with a mixture of chloroform and alcohol or ethyl acetate, which dissolves the acetyl cellulose. The solution, containing the unconverted cellulose, is used for the coating, and the cellulose renders it permeable to the electrolyte, when set.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1.) A composition for producing porous coatings of electrodes and depolarizers in galvanic cells, consisting of a solution of acetyl cellulose mixed with cellulose fibres.

2.) A coating composition for electrodes and depolarizers in galvanic cells, prepared by treating partially acetylized cellulose with a solvent for acetyl cellulose.

3.) A coating composition as claimed in claim 1, having an admixture of alcohol.

4.) The process of preparing a coating for the electrodes and depolarizers of galvanic cells, consisting in partially acetylizing cellulose, to produce a mixture of acetyl cellulose and cellulose, and mixing this mixture with a solvent of acetyl cellulose.

Dated this 24th day of March, 1931.

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